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Torres

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(54) **NOTE SHEET WITH PRESSURE-SENSITIVE ADHESIVE AND METHOD OF FABRICATION**

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Related U.S. Application Data

(62) Division of application No. 08/932,416, filed on Sep. 17, 1997, now Pat. No. 5,965,225.

(51) **Int. Cl.**[7] **B31F 7/00**
(52) **U.S. Cl.** **156/204**; 156/227; 156/267; 156/269; 156/291
(58) **Field of Search** 156/204, 227, 156/267, 269, 291, 270; 281/2; 270/39.05; 493/413, 430, 433

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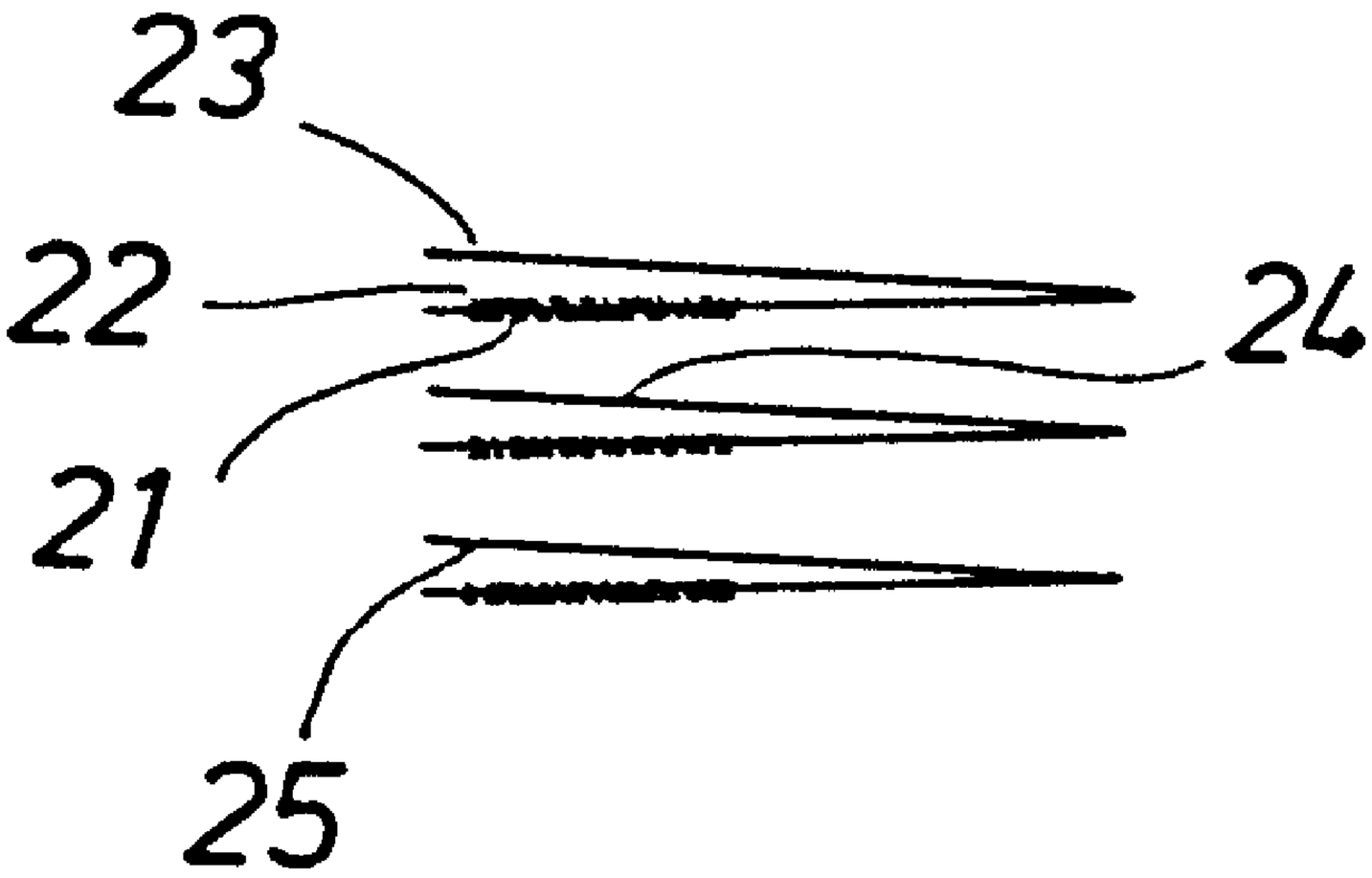
(57) **ABSTRACT**

A sheet of paper is provided with pressure-sensitive adhesive on areas of its front and rear surfaces. In a preferred form, the sheet is provided as a pad of similar sheets that may be removed from the pad one sheet at a time. The adhesive on the rear of the sheet is employed to secure the sheet to a first object. The adhesive on the front of the sheet is employed to secure a second object to the sheet. An area of the sheet face free of adhesive may be employed for a written message. A modified sheet is provided with cuts formed in an adhesive area of the sheet so that the cut area of the paper may move away from the plane of the sheet to adhere to irregular surfaces. The cut sheet may have adhesive on one or both sides. Where the adhesive is applied to both sheet sides, pressure-sensitive adhesive on the back of the uncut side of the sheet is used for adhering the sheet to a smooth surface. One modification of the pad configuration provides individual sheets folded so that the adhesive on the sheet is covered by an adhesive-free portion of the sheet so that no adhesive is exposed on the top of the pad. In manufacturing a pad of sheets in which the top sheet has no exposed adhesive, an elongated strip of paper has adhesive applied to both sides of the strip at spaced adhesive locations on the strip. The strip is folded in an accordion fashion to provide alternating folds with no adhesive and folds with adhesive. The pad is cut to provide one or more pads of individual sheets, each folded upon itself. The adhesive in each sheet adheres to the underlying sheet to hold the sheets together in the pad.

12 Claims, 2 Drawing Sheets



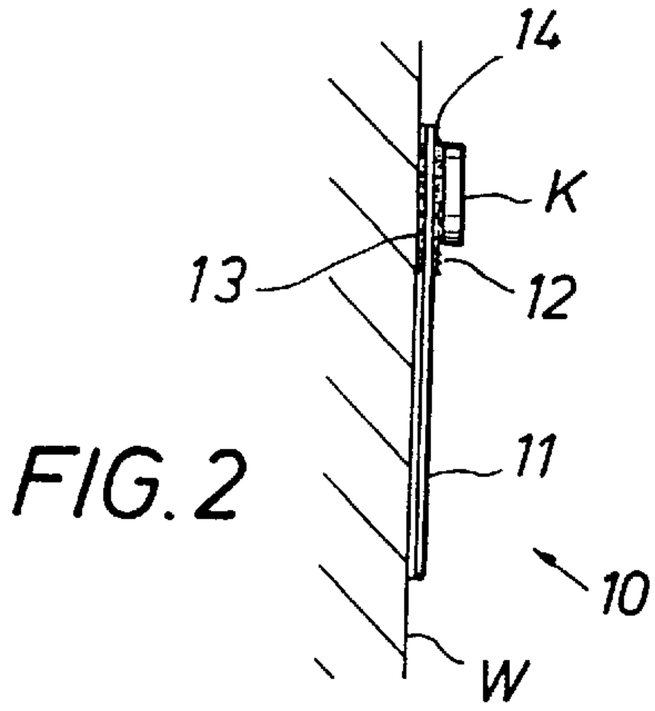


FIG. 2

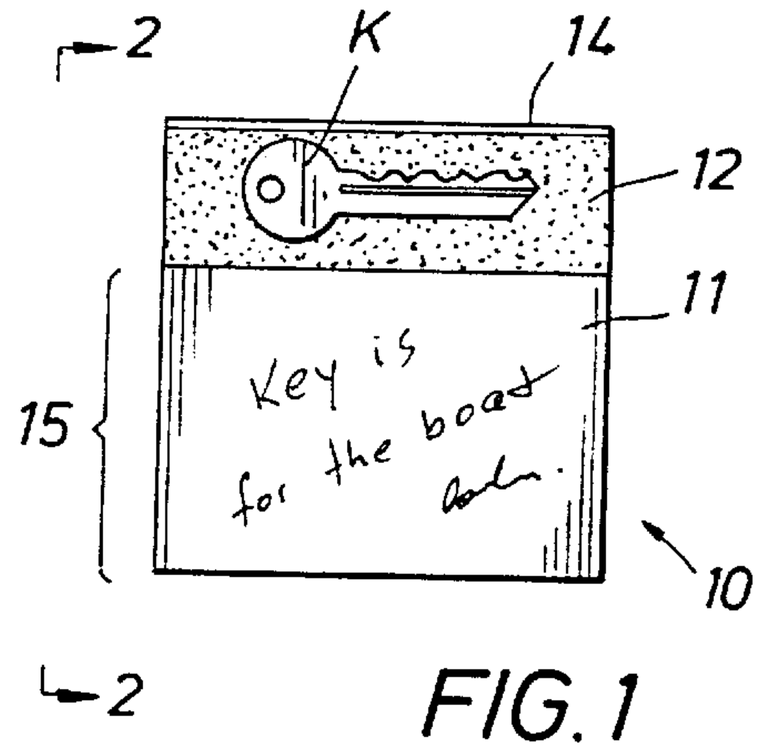


FIG. 1

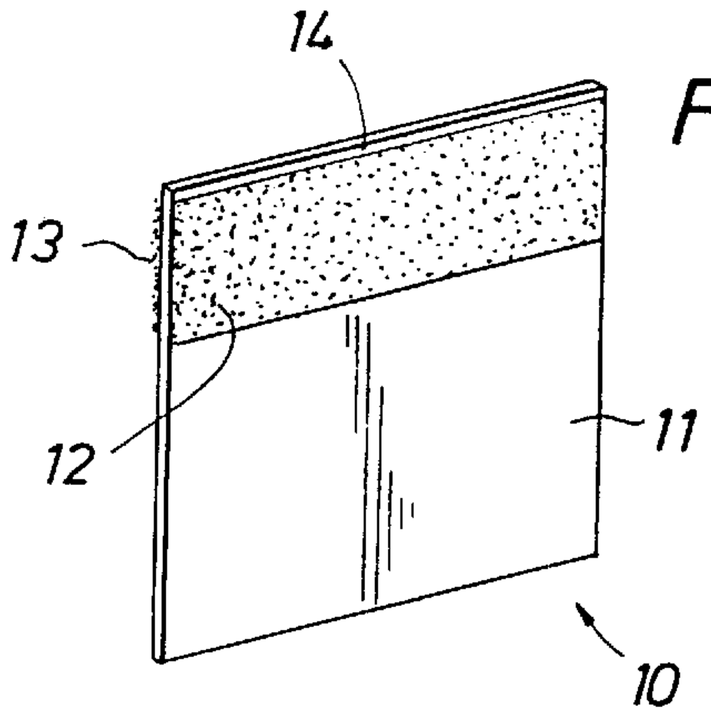


FIG. 3

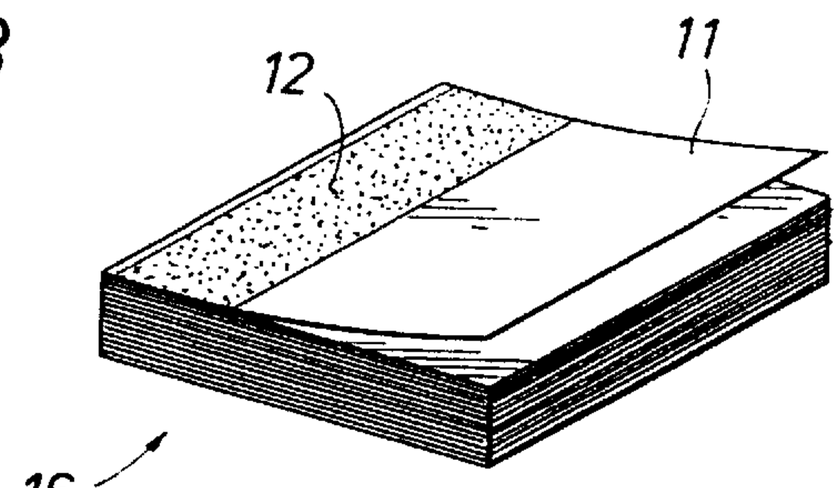


FIG. 4

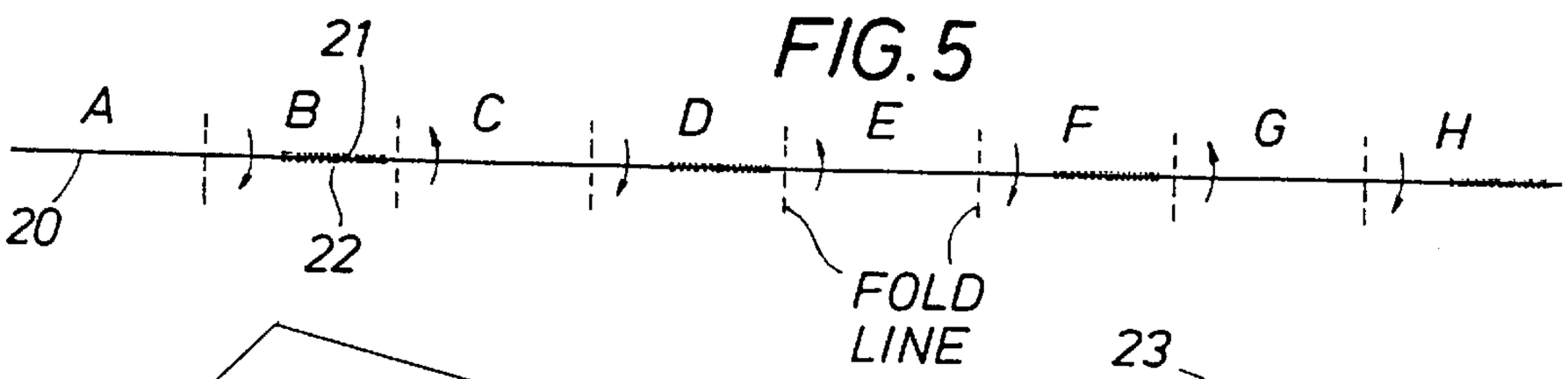


FIG. 5

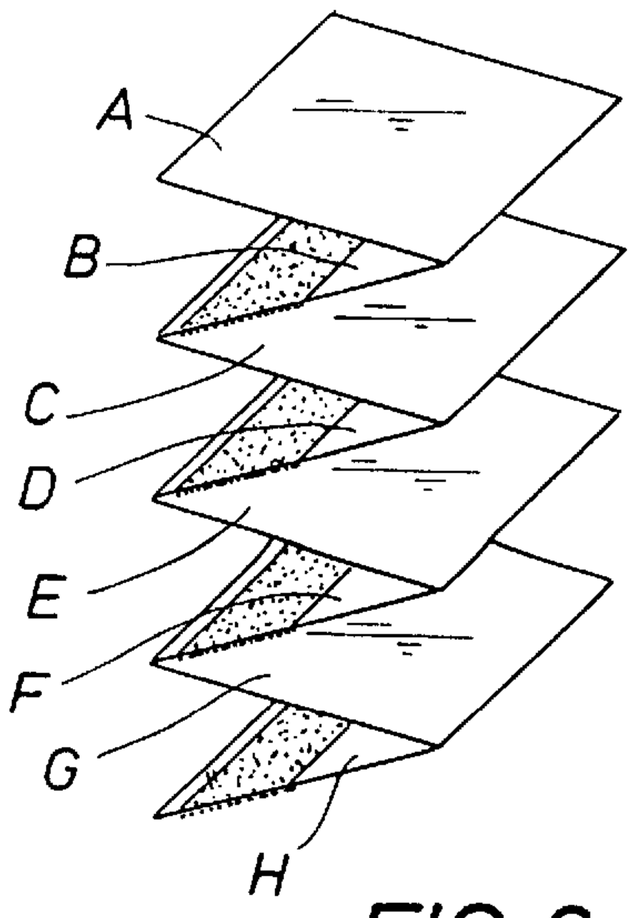


FIG. 6

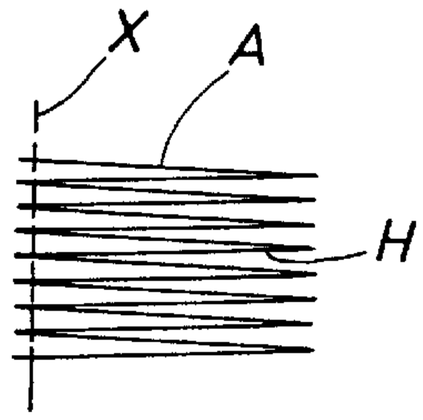


FIG. 7

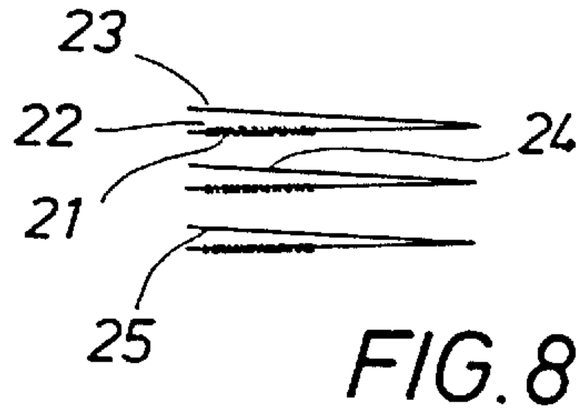


FIG. 8

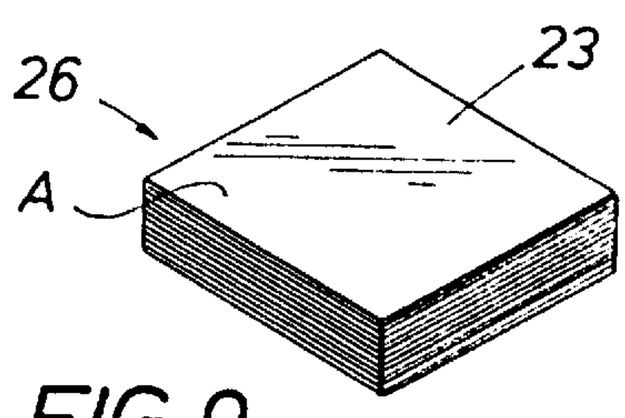


FIG. 9

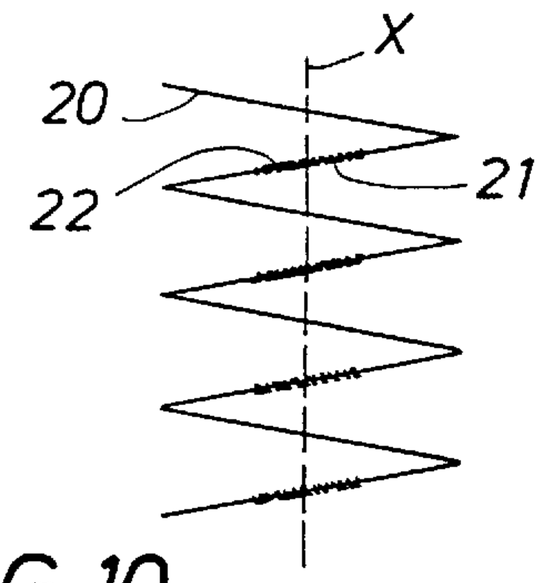


FIG. 10

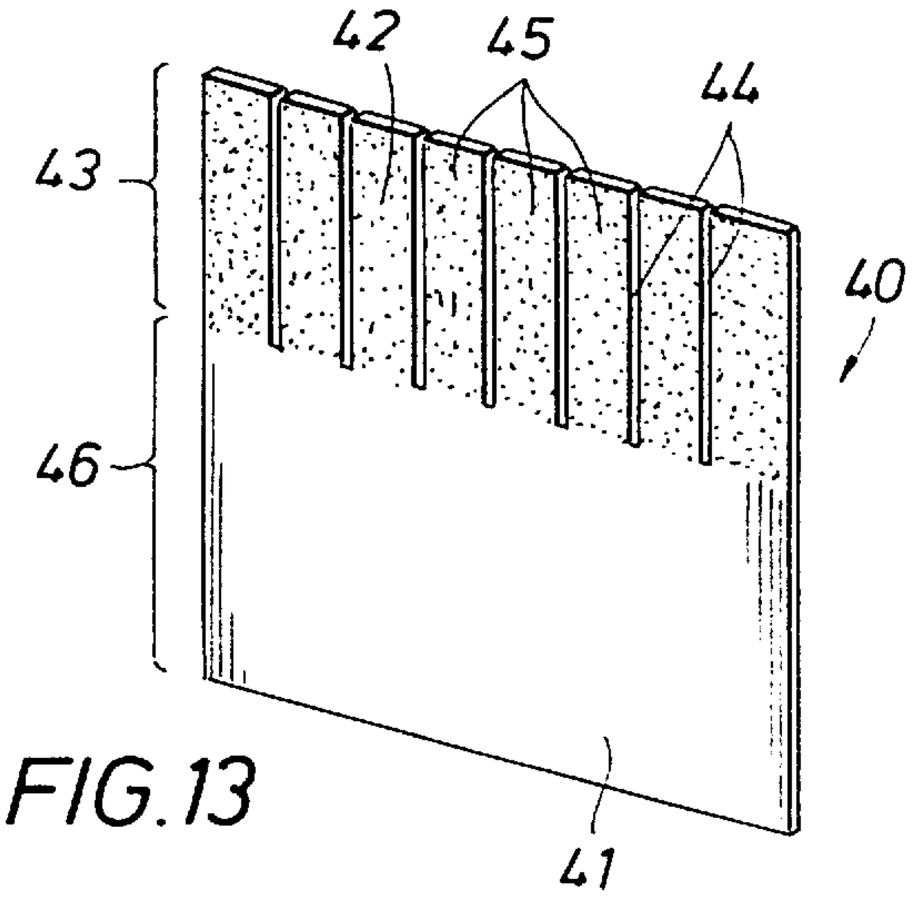


FIG. 13

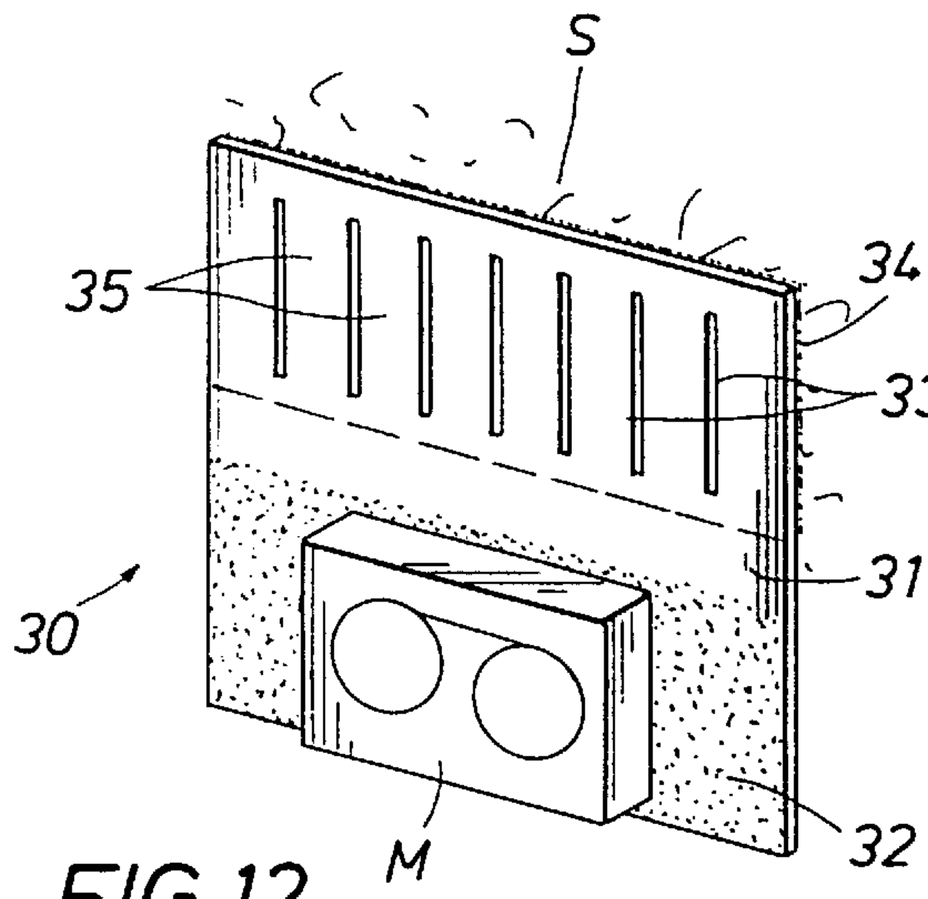


FIG. 12

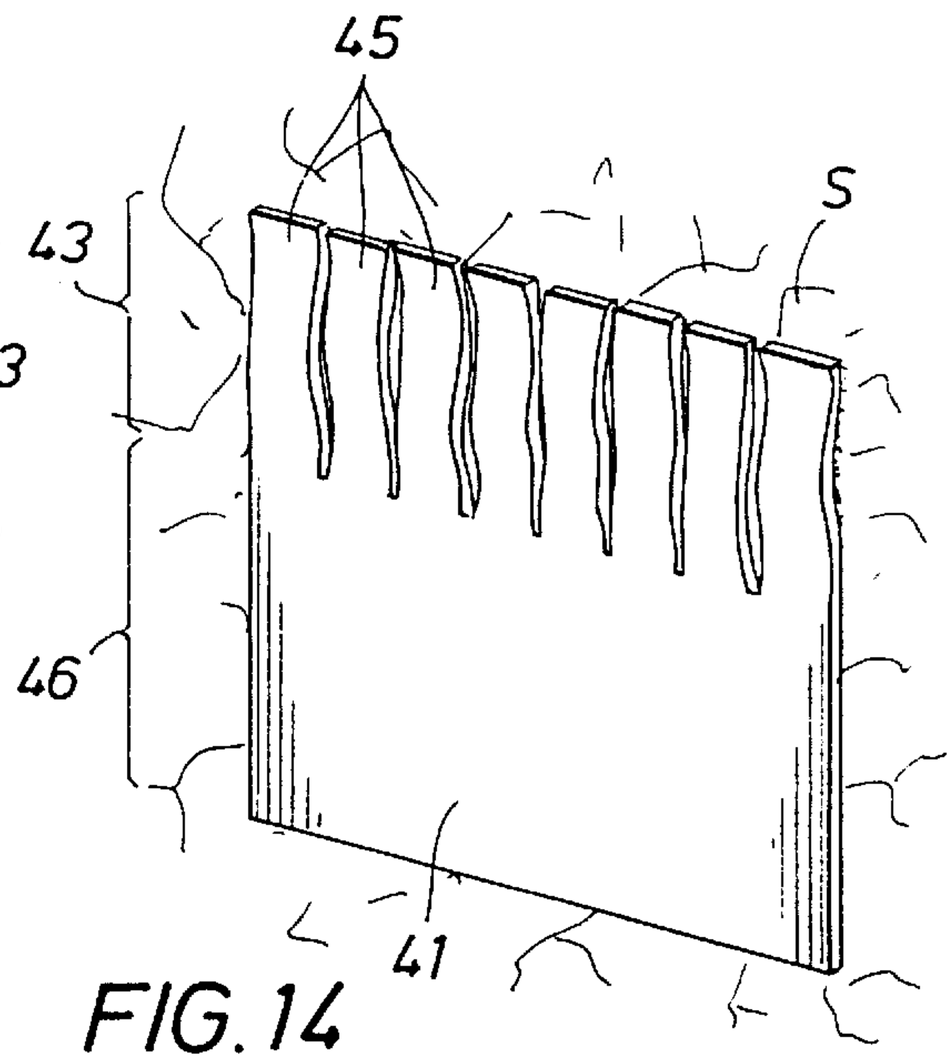


FIG. 14

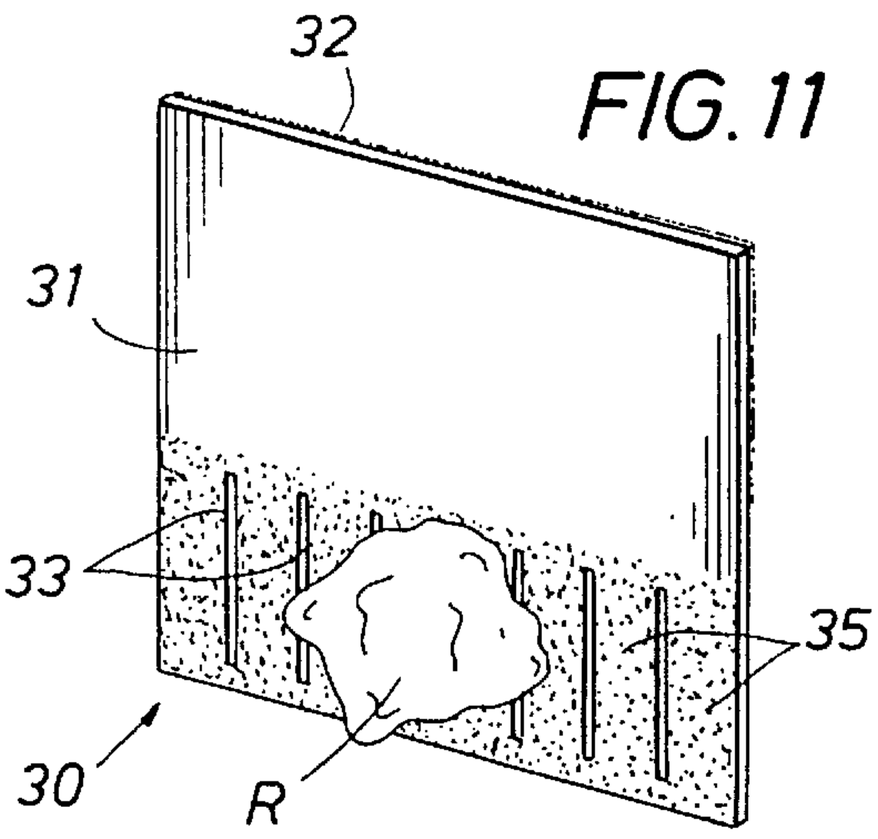


FIG. 11

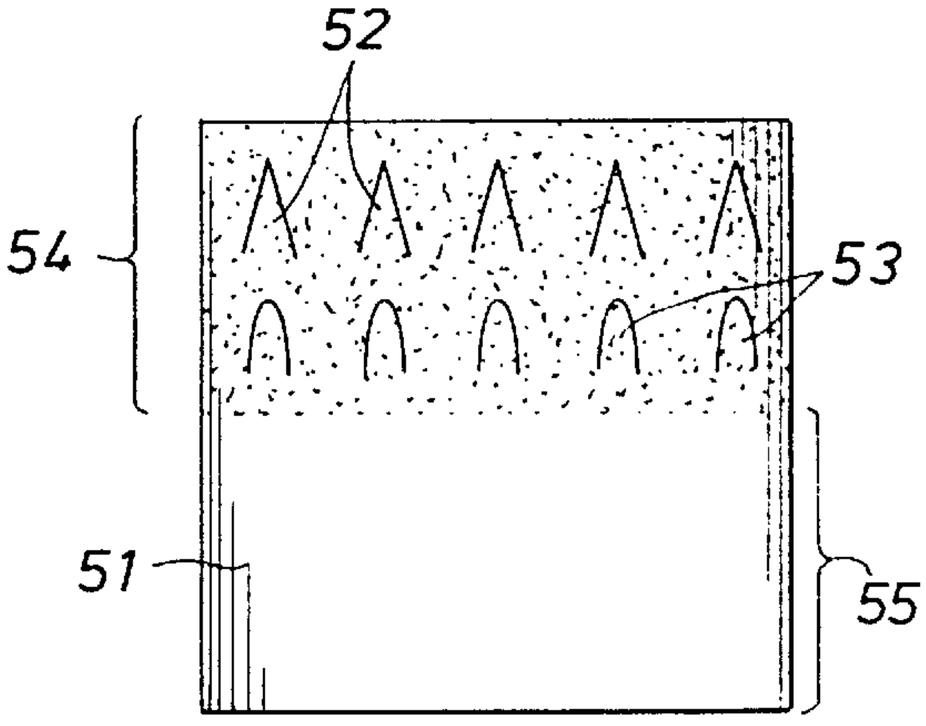


FIG. 15

NOTE SHEET WITH PRESSURE-SENSITIVE ADHESIVE AND METHOD OF FABRICATION

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a divisional of U.S. patent application Ser. No. 08/932,416, filed Sep. 17, 1997 now U.S. Pat. No. 5,965,25.

BACKGROUND OF THE INVENTION

Note pads having pressure-sensitive adhesive applied to the rear surfaces of the individual sheets comprising the pad are well known. These sheets, which are removed from the pad one sheet at a time, are temporarily adhered to an object by the adhesive on the sheet to be employed for memorandums or messages or to mark book pages or other materials. In business and legal office practice, it is common to use these sheets to identify the subject matter of a dictated microcassette that is being sent to a typist for transcription. Typically, a file or other document is associated with the microcassette, and it is desirable to keep the document and the cassette together for the benefit of the typist. It is common to use a rubber band, metal clip, or other mechanical securing device to keep the microcassette and the document together with the note sheet.

Another situation that requires the use of mechanical securing devices with a note sheet occurs when it is desired to associate a note sheet with a small object, such as a key. If the object and the note sheet are to be displayed in a prominent area or an otherwise desired posting place, a means is needed to secure both the object and the note sheet to the desired posting location. This will usually entail the use of a fastener, such as cellophane tape, a thumbtack, or some other mechanical device that secures the note sheet and the small object to the desired posting place.

Problems may also be encountered in attaching the note sheet, either alone or with a small object, to an irregular posting surface or in attaching an irregularly shaped object to a smooth posting surface. Attaching conventional note sheets having pressure-sensitive adhesive to irregular surfaces can be difficult because of the limited surface contact between the irregular surface and the adhesive areas of the sheet. Additionally, forcing the adhesive area on the sheet to adhere to the irregular surface can distort the note sheet, making the message area wrinkled and difficult to read or access.

BRIEF SUMMARY OF THE INVENTION

In one preferred form of the invention, adhesive provided on the front and back of a paper note sheet secures the back of the sheet to an object and secures an object to the front of the sheet. An adhesive-free space provided on the front of the sheet receives markings such as a short note. The sheet is dispensed from a pad of sheets.

The note sheets of the pad in one form of the invention are folded upon themselves to prevent adhesive from being exposed on the top sheet of the pad.

In a modification of the invention, the adhesive-containing area at one end of the sheet is cut to form strips or tabs that are free to move away from the plane of the uncut area of the sheet to better adhere to an irregular surface or object. The uncut area on the reverse side of the opposite end of the sheet is provided with adhesive for preferential contact with a smooth surface. If the supporting or posting surface for the sheet is smooth, the uncut portion of the sheet is applied to the support surface. If the surface of the support is irregular, the strips or tabs of the cut portion of the adhesive area are applied to the support surface. In either situation, the cut adhesive section may be preferentially applied to the supporting or to the supported object, depending upon the extent of the surface regularity of the two objects. A modification of this form of the invention includes a sheet in which cuts formed in the adhesive area extend through the sheet edge so that the strips or tabs have a free end.

A preferred method of manufacturing one form of the invention comprises the steps of applying adhesive to the front and back of a strip of paper at spaced locations along the length of the strip. The strip is folded in layers, accordion-style, with one layer free of adhesive and the adjacent layer having adhesive on its front and rear sides. The fold side of the resulting pad of layered folds, adjacent the adhesive area, is cut away to separate the sheets into individual folded sections. The sections are held together by the adhesive in the folds to retain the separated sheets in the pad. No adhesive remains exposed at the top of the pad. Two pads may be fabricated by folding the strip such that the adhesive is in the center area of a fold and then cutting the pad in two along the center area.

Where the sheet is intended to be used to support physical objects, a larger percentage of the sheet will carry adhesive, both to better adhere to the supporting medium, as well as to better hold the supported object. As much as 20% or more of one or both sides of the sheet may be provided with adhesive for these applications.

From the foregoing, it will be appreciated that a primary object of the present invention is to provide a sheet of note paper that can secure two objects together.

Another object of the present invention is to provide note paper sheets in a pad with the individual sheets being removable from the pad to be used for securing two objects together and for providing space for a written message.

It is also an object of the present invention to provide a method for manufacturing a pad of note paper sheets in which adhesive is applied to both sides of each sheet of the pad.

Another object of the invention is to provide a pad of double-sided adhesive paper sheets in which the paper sheet at the top of the pad has no exposed adhesive.

Yet another object of the present invention is to provide a sheet of double-sided adhesive paper that may be posted on a first object, a message written upon the front of the sheet, and the sheet folded upon itself to adhere to the exposed adhesive on the paper surface to cover the message and the exposed adhesive.

Yet another object of the present invention is to provide a sheet of note paper having a pressure-sensitive adhesive applied to one or more areas of the sheet with cut sections provided in one of the adhesive areas whereby the cut area of the sheet forms strips or tabs that may be made to better conform and adhere to an irregular surface.

Still another object of the present invention is to provide a note sheet that has strips cut to one edge of the sheet, with adhesive carried on the strips, to allow the sheet to be adhered to an irregular surface to increase the adhesive forces between the sheet and the irregular surface and to prevent the message area of the sheet from being distorted.

The foregoing, as well as other, objects, features, and advantages of the present invention, will be more fully

explained and will be better understood and appreciated by reference to the following drawings, specification, and claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is an elevation illustrating a sheet of note paper of the present invention employed to secure a small object to a wall;

FIG. **2** is a cross-sectional view taken along the line **2—2** of FIG. **1**;

FIG. **3** is an elevation, in perspective, illustrating a note sheet of the present invention having adhesive applied to the front and back of the sheet;

FIG. **4** is a perspective view of a pad of sheets made in accordance with the teachings of the present invention;

FIG. **5** is a schematic drawing illustrating a strip of paper used in a method of fabricating the paper sheets employed in one form of the present invention;

FIG. **6** is a schematic representation of the strip of paper illustrated in FIG. **5**, folded accordion-style before being compressed into a pad form;

FIG. **7** schematically illustrates a pad of the folded paper strip of FIG. **6** with a cut line indicated along one fold end of the pad;

FIG. **8** schematically illustrates the formation of multiple individual sheets of note paper formed after a fold end of the pad is cut away;

FIG. **9** is a perspective view illustrating a pad of note paper sheets formed in accordance with the teachings of the present invention;

FIG. **10** schematically illustrates a modified method for fabricating two rectangular solid pads of sheets of the present invention;

FIG. **11** is a plan view illustrating a modified form of a note sheet of the present invention in which one of the adhesive areas is cut to permit the sheet to adhere to irregular surfaces on a secured object while the sheet is secured to a smooth surface;

FIG. **12** is an elevation illustrating the form of the invention depicted in FIG. **10** being used to support a smooth surface object from an irregular surface;

FIG. **13** is an elevation of a modified form of the note sheet of the present invention in which cuts formed in the adhesive area of the paper extend to the paper edge;

FIG. **14** illustrates the sheet of FIG. **12** adhered to an irregular surface; and

FIG. **15** illustrates a sheet of the invention equipped with tabs cut into the adhesive-covered area of the sheet.

DESCRIPTION OF THE ILLUSTRATED EMBODIMENTS

The note sheet of the present invention is indicated generally at **10** in FIG. **1**. The note sheet comprises a sheet body **11** of paper or other suitable material having a pressure-sensitive adhesive material **12** applied to the front surface of the sheet. An object such as a key K is illustrated adhered to the adhesive material **12**. Referring jointly to FIGS. **1** and **2**, one may see that the sheet **11** is provided with adhesive material **13** on its back surface opposite the adhesive material **12**. The adhesive materials **12** and **13** are applied in the area adjacent an upper side edge **14** of the sheet **11**. In the illustration of FIG. **2**, the adhesive material **13** is used to secure the sheet **11** to a posting area such as a wall W. The lower portion of the sheet **11** is free of adhesive material to provide a message area **15** on the sheet face.

FIG. **3** illustrates the sheet **11** as it appears before being posted or adhered to an object. While only a small percentage of each surface of the sheet **11** is illustrated as carrying adhesive material, it will be understood that increased areas of adhesive material may be employed for holding larger or heavier objects. In a preferred form, for use with heavier objects, 20% or more of each side of the sheet may carry adhesive material.

A rectangular solid pad indicated generally at **16** in FIG. **4** is formed by a number of individual sheets **11** adhered to each other. The individual sheets are held together in pad form by the adhesive material **12** and **13** provided on each sheet of the pad.

A method for fabricating one form of the note sheets of the present invention is partially illustrated in FIG. **5**. A continuous strip of paper **20** is provided with a pressure-sensitive adhesive **21** and **22** on opposite sides of the strip. The adhesive is positioned at defined, spaced locations along the length of the strip as indicated in FIG. **5**. Once the adhesive has been applied to the strip **20**, the strip is folded between each section A–H along the indicated fold lines and in the direction of the arrows associated respectively with each section A–H. The result is an accordion-like fold illustrated in FIG. **6**.

The folded strip **20** is compressed into a rectangular solid pad configuration and the fold edge nearest the adhesive areas of the pad is cut or shaved away, as indicated by the cut line X illustrated in FIG. **7**. With reference to FIG. **8**, the result of cutting the edge of the pad is a number of individual sheets **23**, **24**, and **25**, made respectively by the sections AB, CD, and EF. The adhesive **21** is applied so that it is slightly back from the edge of the section B to leave an adhesive-free edge area that permits the sheet section A to be grasped and pulled away from the section B to open the two sections into a single-ply sheet. Each of the sheets in the pad is similarly constructed.

As illustrated in FIG. **8**, each sheet includes adhesive material on opposite sides of a portion of the sheet, with the adhesive in each sheet of the pad of sheets being adjacent a common edge of the pad. The adhesive **21** and **22** on each of the individual sheets secures each sheet to the adjoining sheet to form a rectangular solid pad **26**, as illustrated in FIG. **9**. The top surface area A of the pad **26** carries no exposed adhesive. This feature prevents extraneous materials from adhering to the pad.

Sheets of the type illustrated in FIGS. **8** and **9** may be employed as described with reference to the sheet **11** illustrated in FIGS. **1–4**. In addition, rather than being used to hold an object to a posting surface, the sheet, such as the sheet **23**, may be employed to post a concealed message. In this application, the bottom section of the note sheet is folded over the message and adhered to the adhesive at the top front of the sheet to keep the message covered until the note sheet is unfolded. Thus, with reference to the sheet **23** of FIG. **8**, the adhesive **21** may be used to adhere the sheet to a posting surface, and a message may be written in the message area adjacent the adhesive **22**. The section A may then be folded up over the Section B to engage the adhesive **22**, which covers the message and the adhesive **22**. This prevents the message from being viewed without first unfolding the section A from the section B and also prevents extraneous material from adhering to the adhesive **22**. When the sheet **23** is intended only as a marker or message conveyance and is attached to a file or other portable object, folding the sheet **23** back upon itself serves the additional function of preventing materials from sticking to the exposed adhesive **22**.

The double-sided adhesive sheet and pad illustrated in FIGS. **3** and **4** may also be fabricated by folding the strip **20** so that the adhesive-bearing areas **21** and **22** are positioned at the mid-point of alternating folds, with adhesive-free areas on either side of the adhesive areas of a fold and no adhesive on alternating folds as indicated in FIG. **10**. The resulting pad may then be cut through its center along the cut line X to divide the pad into two equal sized rectangular solid pads that each carry adhesive along the sheet area adjacent the cut.

A modified form of the invention is illustrated in FIGS. **11** and **12** for use when one of the objects to which the paper sheet is to be secured has an irregular surface. The note sheet of the modified embodiment is indicated generally at **30** in FIG. **11**. The sheet **30** includes a flat, planar body **31** provided with adhesive material **32** along its upper rear surface. The lower portion of the sheet body is cut with a series of lengthwise cuts **33** that extend through adhesive material **34** applied to the lower front surface of the sheet body **31** to form paper segments or strips **35**.

As best described with reference to FIG. **12**, the note sheet **30** is applied to an irregular surface S by placing the adhesive material **34** against the surface S and applying pressing forces against the opposite side of the strips **35**. The cuts **33** permit the strips **35** of paper to be independently moved laterally relative to the plane of the sheet body **31** to better conform to the irregular surfaces. A smoother surface object, such as a microcassette M, may be attached to the adhesive **32** on the face of the sheet body **31**.

FIG. **11** illustrates the use of the sheet **31** to secure an object R having an irregular, or non-smooth, surface to a smoother object T. The adhesive material **32** on the sheet **31** secures the sheet to the object T as previously described.

Another modified form of the sheet of the present invention is illustrated generally at **40** in FIG. **13** of the drawings. The note sheet **40** is formed by a planar sheet body **41** of paper having adhesive **42** applied along a surface area **43**. The paper in the surface area **43** is cut by a series of cuts **44** that form multiple finger segments or strips **45**. Unlike the cuts of the embodiment of FIGS. **11** and **12**, the cuts **44** extend to the edge of the sheet **41** so that the ends of the finger strips **45** are free to move away from the plane of one sheet body, as well as from adjoining strips. An uncut, adhesive-free area **46** is provided adjacent the adhesive-covered area **43** to receive a marking or message. Where only one side of the sheet **41** is provided with adhesive, the message surface is preferably formed on the side of the sheet having no adhesive.

FIG. **14** illustrates the sheet **41** adhered to an irregular surface S. In use, the adhesive-covered areas of the individual finger strips **45** are pressed against the surface S. The finger strips are free to follow the contour of the irregular surface without distorting the message area **46**. The free movement of the strips **45** also increases the amount of surface contact between the adhesive-covered area of the sheet **41** and the irregular surface S to increase the holding force between the sheet and the surface S. As with the previously described embodiments, multiple sheets **41** may be assembled in pad form.

It will also be appreciated that the form of the sheet illustrated in FIGS. **11** and **12** may be provided with cuts **33** that extend through the edge of the sheet to make finger strips such as those illustrated in the embodiment of FIGS. **13** and **14**. Similarly, the sheet **30** of the embodiment of FIGS. **11** and **12** may be provided with adhesive only in the slotted or cut area and only on one side of the sheet. Such a configuration would be employed for posting a message (without an object attachment) on an irregular surface.

FIG. **15** of the drawings illustrates a sheet **51** having segments or tabs **52** and **53** cut into an adhesive-covered area **54**. The tip ends of the sharp tip tabs **52** and rounded tip tabs **53** are free to move away from the plane of the sheet **51** to adhere to an irregular surface without distorting an adhesive-free message area **55** provided at the bottom of the sheet. The rear side of the sheet **51** may be, or may not be, provided with an adhesive-covered area.

The adhesive material used for the sheets described in the present invention may be any suitable semi-sticky, pressure-sensitive adhesive material that can be used to temporarily join two surfaces together. By way of example rather than limitation, the adhesive may be an acrylate copolymer microsphere structured adhesive, as described in U.S. Pat. No. 3,691,140. The degree of adhesion of the adhesive material within the area of adhesive application on the sheet may also be controlled as desired, for example, to better control or regulate the removal of sheets from a pad or to better control the self-retention strength of the pad structure. Such adhesives and adhesive application techniques are well known. While the preferred material for the note sheets of the present invention has been described as paper, it will be understood that other materials, such as plastic and other synthetic material, may be employed without departing from the spirit and scope of the present invention. The two major surfaces of the sheets of the present invention may be any desired size, such as 2 inches by 3 inches, 3 inches by 1½ inches, 8 inches by 11 inches, or any other desired size. The thickness of the sheets may be similar to that of standard letter paper or may be any other suitable thickness. It will also be understood that the sheets may take on any desired polyhedron shape or other form, including circular, oval, and other arcuate shapes. Similarly, the segments such as the strips and tabs cut into the sheets may take on a variety of different shapes as desired.

Accordingly, it will be appreciated that while preferred forms of the note pad and method of the present invention have been described herein in detail, various changes in the size, shape, form, methods of construction, and use of the invention may be made without departing from the spirit and scope of the invention, which are more filly defined in the following claims.

What is claimed is:

1. A method for making a pad of note sheets, comprising the steps of:

applying a pressure-sensitive adhesive to spaced, defined adhesive areas on opposing sides of an elongate strip of material;

folding the strip of material between adhesive areas, in accordion fashion, to form a rectangular pad of equal length folds extending between opposing fold edges and in which the adhesive areas are adjacent one fold edge of said pad; and

cutting the pad at said one fold edge to sever adjacent folds from each other, whereby said pad is comprised of multiple independent single-folded sheets having adhesive adjacent opposing sides of one sheet edge.

2. A method as defined in claim **1** wherein said sheets are held together in said pad by the adherence of said adhesive to adjacent sheets.

3. A method as defined in claim **1** wherein adhesive on the top sheet in said pad is covered by an adhesive-free area of said top sheet whereby the top of said pad has substantially no exposed adhesive material.

4. A method as defined in claim 1 comprising the further step of cutting said strip in said defined area to form segments that are free to move laterally relative to the plane of said strip.

5. A method of making a pad of note sheets, comprising the steps of:

applying a pressure-sensitive adhesive to defined areas on opposing sides of a strip of planar material at equally spaced locations along said strip;

folding said strip in accordion fashion into a rectangular solid pad comprised of adjacent folds with adhesive material disposed in the central area of alternating folds; and

cutting said pad through the central area of said folds to divide said pad into two separate rectangular solid pads.

6. A method as defined in claim 5, further comprising the step of cutting said material in said defined areas to form segments of said material that are free to move relative to the plane of said planar material.

7. A method for making note sheets, comprising the steps of:

applying a pressure-sensitive adhesive to spaced, defined adhesive areas on opposing sides of an elongate strip of material;

folding the strip of material between adhesive areas in accordion fashion to form a rectangular pad of equal length folds extending between opposing fold edges; and

cutting the pad to sever adjacent folds from each other to form multiple independent single-folded sheets having adhesive carried on opposing sides of each sheet.

8. A method for making notes sheets as defined in claim 7, comprising the further step of cutting the strips in the defined adhesive areas to form sheet segments that are free to move laterally relative to the plane of the strip.

9. A method for making note sheets as defined in claim 7 wherein the adhesive areas are placed near one fold edge of the pad such that adhesive is in close proximity to opposing sides of each sheet edge when said pad is cut.

10. A method for making note sheets as defined in claim 7 wherein the adhesive areas are placed intermediate the fold edges and the pad is cut in the adhesive area to form two pads each having sheets that carry adhesive along the sheet area adjacent the cut.

11. A method for making note sheets as defined in claim 9, comprising the further step of cutting the strips in the defined adhesive areas to form sheet segments that are free to move laterally relative to the plane of the strip.

12. A method for making note sheets as defined in claim 10, comprising the further step of cutting the strips in the defined adhesive areas to form sheet segments that are free to move laterally relative to the plane of the strip.

* * * * *